Remarks

By the present amendment, claim 18 has been amended to incorporate the subject matter of claims 19 and 21 which have been deleted. Claims 20 and 22 have been amended to depend on claim 18. New claim 34 has been added which corresponds to claim 25. New claim 35 has been added which specifies that the target molecule is a protein. The amendments have been made without prejudice and without acquiescing to any of the Examiner's objections. The amendments do not contain any new matter and their entry is respectfully requested.

The Official Action dated August 29, 2002 has been carefully considered. It is believed that the comments submitted herewith and the following comments represent a complete response to the Examiner's rejections and place the present application in condition for allowance. Reconsideration is respectfully requested.

Drawings

As requested in the Notice of Draftsperson Drawing Review, we are enclosing a new set of Figures 1-19 to replace the figures currently on file.

Specification

The Examiner has objected to the disclosure in view of abbreviations "HPR" on page 8 and "CaMV" on page 19. We assume the Examiner was referring to the term "HRP" as the term "HPR" does not appear in the application. In response, these terms have been spelled out at the first instance of use on pages 8 and 19.

35 U.S.C §112

The Examiner has objected to claims 21-28 under 35 U.S.C. §112, second paragraph as being indefinite. We respectfully disagree with the Examiner for the reasons that follow.

The objection to claims 21, 23, 24 and 28 seem to arise from a misunderstanding of the limitation in the claim. In particular, the Examiner is stating that these claims specify

that the ligand cannot be a protein which is not correct. The wording used in the claims reads "the ligand is not a protein that is normally associated with oil bodies". As a result, the ligand can be a protein as long as the protein is not normally associated with oil bodies. Examples of proteins that normally associate with oil bodies include oil body proteins.

The Examiner has also objected to claim 25 in view of the phrase "disruption of the cell's integrity". The Examiner comments that it is not apparent as to whether or not the disruption regards chemical or physical disruption. We respectfully submit that any and all types of methods to disrupt a cell would be included within the scope and Applicant does not need to limit to one type or another.

In view of the foregoing, we respectfully request that the objections of the claims under 35 U.S.C. §112, second paragraph be withdrawn.

35 U.S.C. §102

The Examiner has objected to claims 18-20, 22, 24, 26, 27, 29 and 30-33 under 35 U.S.C. 102(a) as being anticipated by Moloney, M. (U.S. Patent No. 5,650,554). We respectfully disagree with the Examiner for the reasons that follow.

The present invention concerns the use of oil bodies and oil body proteins as purification and separation tools for desirable target molecules (such as recombinant proteins) from a sample. In accordance with the invention, oil bodies are contacted with a sample that consists of oil bodies and the target molecule. This results in the specific association of the oil bodies with the desired target molecule. The oil bodies and the target molecules attached thereto are then separated from the sample.

In contrast, the patent cited by the Examiner (which names the present inventor, Maurice Moloney) is concerned with a novel method for the production of recombinant proteins, such as pharmaceutical proteins, using plants as a host system. The method disclosed in the Molon y patent involves the expression of recombinant proteins on oil

bodies. The method involves th preparation of a chim ric construct consisting of a DNA sequence encoding a recombinant protein and a DNA sequence encoding an oil body protein (for example oleosin) to facilitate targeting of the chimeric protein to the oil body.

The Moloney patent cited by the Examiner does not disclose the use of oil bodies and their associated proteins to separate target molecules from a sample as claimed in the present application. Independent claims 18 and 29 specify that the ligand molecule is not a protein that normally associates with oil bodies. As such, the ligand molecule cannot be an oil body protein. Hence, the Moloney patent can be said to anticipate the claims of the present application.

In view of the foregoing, we respectfully request that the objections to the claims under 35 U.S.C. §102 be withdrawn.

Obviousness Type Double Patenting

The Examiner has objected to the claims under the judicially created doctrine of obviousness type double patenting over the claims that issued in U.S. Patent No. 5,856,452. In response, we enclose a Terminal Disclaimer to be entered in the above-referenced patent application. Please charge the government fee of $55.00 (small entity) required for the Terminal Disclaimer is enclosed to our Deposit Account No. 02-2095. Please charge any deficiency in fee or credit any overpayment to our Deposit Account No. 02-2095.

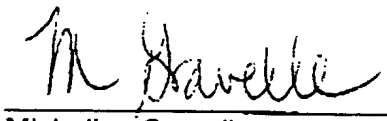
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made".

The Commissioner is hereby authorized to charge any fee (including any claim fee) which may be required to our Deposit Account No. 02-2095.

In view of the foregoing comments and amendments, we respectfully submit that the application is in order for allowance and early indication of that effect is respectfully requested. Should the Examiner deem it beneficial to discuss the application in greater detail, he is kindly requested to contact the undersigned by telephone at (416) 957-1682 at his convenience.

Respectfully submitted,

Maurice Moloney, Joseph Boothe and Gijs van Rooijen



Micheline Gravelle
Registration No. 40,261

MG/jl
Enc.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The paragraph on page 8, lines 20-29 has been amended as follows:

--**Figure 16.** A western blot illustrating the binding of horseradish peroxidase (HRP) conjugated mouse anti-rabbit antibodies to oil body protein extracts obtained from transgenic *B. napus* lines expressing oleosin-protein A fusion proteins. Shown on a Western blot probed with an HRP- conjugated antibody are oil body protein extracts from transgenic lines, opa 30 (lane 3), opa 31 (lane 4), opa 34 (lane 5), opa 36 (lane 6), opa 47 (lane 7), opa 93 (lane 8), all expressing an oleosin-protein A fusion protein and a control untransformed *B. napus* line (lane 9), as well as lysates of *E. coli* DH5α transformed with pRIT2T expressing protein A (lane 2) and untransformed *E. coli* DH5α (lane 1).--

The paragraph on page 19, lines 23-31 has been amended as follows:

--Both non-seed specific promoters, such as the 35-S Cauliflower Mosaic Virus (CaMV) promoter (Rothstein et al., 1987; Gene 53: 153-161) and seed-specific promoters such as the phaseolin promoter (Sengupta-Gopalan et al., 1985; PNAS USA **82**: 3320-3324) or the Arabidopsis 18 kDa oleosin (Van Rooijen et al., 1992; Plant Mol. Biol. **18**: 1177-1179) promoters may be used. In addition to the promoter, the regulatory region contains a ribosome binding site enabling translation of the transcripts in plants and may also contain one or more enhancer sequences, such as the AMV leader (Jobling and Gehrke 1987; Nature **325**: 622-625), to increase the expression of product.--

In the Claims:

Claims 18, 20 and 22 have been amended as follows:

18. (Twice Amended) A method for the isolation of a recombinant polypeptide from a cell, said cell comprising oil bodies and the recombinant polypeptide, said method comprising:

(1) contacting (i) said oil bodies with (ii) a protein ligand molecule that associates with the oil bodies and the target molecule, and (iii) said recombinant polypeptide to allow said recombinant polypeptide to associate with said oil bodies through the protein ligand molecule, wherein the protein ligand molecule is not a protein that is normally associated with oil bodies; and

(2) isolating said oil bodies associated with said recombinant polypeptide.

20. (Amended) A method according to claim [19] 18 wherein said ligand is an antibody, an antibody fragment or a single chain antibody that binds to an oil body protein.

22. (Amended) A method according to claim [19] 18 comprising:

a) introducing into said cell (i) a first nucleic acid sequence molecule encoding a recombinant polypeptide and (ii) a second nucleic acid sequence encoding a ligand capable of associating with said recombinant polypeptide and with said oil bodies;

b) growing said cell under conditions permitting the expression of said recombinant polypeptide and said ligand;

c) contacting (i) said oil bodies with (ii) said recombinant polypeptide to allow said recombinant polypeptide to associate with said oil bodies through said ligand; and

d) isolating said oil bodies associated with said recombinant polypeptide.

Claims 19 and 21 have been deleted.

New claims 34 and 35 have been added as follows:

34. (New) A method according to claim 32 wherein said target molecule associates with the oil bodies through the ligand molecule upon the substantial disruption of said cell's integrity.

35. (New) A method according to claim 29 wherein the target molecule is a protein.